

**ABSTRACT**

In a particle multibeam lithography apparatus an illumination system (242) having a particle source (203) produces an illuminating beam (205) of electrically charged particles, and a multibeam optical system (208) positioned after the illumination system (242) and comprising at least one aperture plate having an array of a plurality of apertures to form a plurality of sub-beams focuses the sub-beams onto the surface of a substrate (220), wherein for each sub-beam (207) a deflection unit (210) is positioned within the multibeam optical system and adapted to correct individual imaging aberrations of the respective sub-beam with respect to the desired target position and/or position the sub-beam during a writing process on the substrate surface. Preferably, for each sub-beam the respective aperture of the first aperture plate defines the size and shape of the sub-beam cross-section and the multibeam optical system produces a demagnified image of the aperture on the substrate surface, with a demagnification of at least 20 : 1.

Fig.3